

## CLAIMS:

1. A sickle knife apparatus for cutting a crop comprising:

a cutter bar arranged to be located at a position for moving through a crop to be cut;

5 a plurality of fixed knife guards mounted on the cutter bar and projecting forwardly therefrom;

a first sickle having a first bar extending substantially along the full length of the cutter bar and mounted for transverse reciprocation along the cutter bar relative to the fixed knife guards and including a plurality of first blades carried on the  
10 first bar along the length of the first bar;

each of the blades of the first sickle being movable back and forth, as the first bar is reciprocated, between a position at one knife guard and a position at a next knife guard, across a space between the two knife guards in a cutting action and each of the blades having left and right side cutting edges arranged for  
15 cooperation with right and left side surfaces of the knife guards in the cutting action;

a second sickle having a second bar extending substantially along the full length of the cutter bar and mounted for transverse reciprocation along the cutter bar relative to the fixed knife guards and including a plurality of second blades carried on the second bar at spaced positions along the length of the second bar;

20 each of the blades of the second sickle being movable back and forth, as the second bar is reciprocated, between a position at one knife guard and a position at a next knife guard, across a space between the two knife guards in a cutting action and each of the blades having left and right side cutting edges

arranged for cooperation with right and left side surfaces of the knife guards in the cutting action;

wherein the first and second sickles are reciprocated at a phase difference different from 180 degrees so that, as each in turn of the first and second sickles moves toward an end of its stroke and thus ceases its cutting action, the other of the first and second sickles is providing a cutting action.

2. The apparatus according to Claim 1 wherein the first and second sickles are arranged to reciprocate such that, as one of the first and second sickles moves toward an end of its stroke, a leading edge of the blades of the other of the first and second sickle follows behind a trailing edge of the respective blades of said one of the first and second sickles so as to define a space therebetween into which the crop can enter and wherein the trailing edge of the blades of said one of the first and second sickles is arranged at the end of the stroke relative to the side surface of the respective knife guard such that the leading edge of the blades of the other of the first and second sickles effects a cutting action of the crop in said space relative to the side surface of the respective knife guard and not relative to the trailing edge.

3. The apparatus according to Claim 1 wherein each knife guard has on each of its left and right surfaces a top cutting edge and a bottom cutting edge and wherein the blades of the first sickle cut against the bottom cutting edge of the guard and the blades of the second sickle cut against the top cutting edge of the guard.

4. The apparatus according to Claim 1 wherein each of the knife guards has a guide slot therein through which both the first and second sickles pass.

5. The apparatus according to Claim 4 wherein each knife guard has on each of its left and right surfaces a top cutting edge defined at a top of the slot and a bottom cutting edge defined at a bottom edge of the slot and wherein the  
5 blades of the first sickle are sharpened to cut against the bottom cutting edge of the guard and the blades of the second sickle are sharpened to cut against the top cutting edge of the guard.

6. The apparatus according to Claim 5 wherein the blades of the  
10 first sickle have a top surface spaced from the bottom cutting edge which runs in contact with a bottom surface of the blades of the second sickle.

7. The apparatus according to Claim 1 wherein each of the knife guards has two separate guide slots one above the other with one receiving the blades of the first sickle and the other receiving the blades of the second sickle.

15 8. The apparatus according to Claim 1 wherein a maximum width of the blades of each of the first and second sickles is substantially equal to or less than the width of the knife guards at the blades such that the knife guards receive the blades within the side surfaces thereof at the end of the stroke.

9. The apparatus according to Claim 1 wherein the knife guards  
20 define rear corners and the spacing between the knife guards at the rear corners is less than the width thereof at the rear corners.

10. The apparatus according to Claim 1 wherein the angle of phase difference is of the order of about 90 degrees.

11. The apparatus according to Claim 1 wherein the angle of phase difference is in the range of about 45 degrees to about 135 degrees.

12. The apparatus according to Claim 1 wherein the first and second sickles are arranged one directly superposed on the other.